



Diploma/Master/Bachelor Thesis

Topic: Multi-Reference Alignment of Sub-Tomograms

Electron tomography is new and currently the only technique, which can achieve molecular resolution of cells and organelles close to their native environment. The cluster of excellence “macromolecular complexes” has purchased a high-end, state of the art electron microscope, which produces tomograms with unprecedented resolution. In order to further improve the resolution, sub-tomograms, cropped areas from the tomograms, representing putative macromolecular complexes have to be aligned to various references. The alignment is hampered through the low signal to noise ratio and missing data. An algorithms need to be developed in order to overcome these limitations and provide useful alignments of the data. The application of this algorithm will have to be extensively tested on various tomograms.

Our group is world leading in the development of image processing techniques for electron tomography. We have access to a high-end computing cluster, programmable GPUs, and provide the necessary facilities for a successful and fruitful thesis.

Adequate payment will be provided.

Work description:

0% theory

30% development in C/C++ and/or MATLAB

70% application

For detailed information please contact:

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